Name:

Date:

Basic Probability Rules:

1. Sample space is
2. All probabilities are between
3. “and” means
4. “or” means

**Venn Diagrams**

In a group of 16 students, 12 take art and 8 take music. Two students takes neither art nor music. Two students take both. Make a Venn diagram to show this situation.

Are taking art and taking music **mutually exclusive**?

* A student is selected at random. What is the probability that the student takes art?
* A student is selected at random. Given that the student takes music, what is the probability that the student takes art?
* Are taking music and art **independent** events?
* A student is selected at random. What is the probability that the student takes art **but not** music?
* A student is selected at random. What is the probability that the student takes music **given that** the student takes art?

**Tree Diagrams**

Rules:

1. Connected branches must add to
2. along the branches.
3. Label all outcomes.

In a group of 16 students, 12 take art and 8 take music. One student takes neither art nor music. Two students are selected at random, one after the other. Find the probability that the first student takes **only** music and the second student takes **only** art. Make a tree diagram to show this situation.

Ms. Seid has an 87% chance of leaving her house on time in the morning. If she leaves her house on time, she will stop for coffee 97% of the time. If she does not leave her house on time, she will stop for coffee only 83% of the time. Draw and label a tree diagram to show this situation.

* Find the probability that Ms. Seid is on time and gets coffee.
* Find the probability that Ms. Seid is late and gets coffee.
* Find the probability that Ms. Seid gets coffee (at all).
* If Ms. Seid gets coffee, what is the probability that she left the house on time?
* Find the probability that Ms. Seid does not get coffee.
* If Ms. Seid does not get coffee, what is the probability that she left the house on time?
* If Ms. Seid leaves the house on time, what is the probability that she does not get coffee?